

## **The Rock Cycle**

To us the Earth seems unimaginably huge and solid. We jump on it, dig in it, drop bombs on it, and rarely see any change. A boulder we see laying on the ground in the woods may have been lying in that same place for thousands of years. Only the occasional earthquake, volcanic eruption, or flood reminds us that the Earth is constantly changing.

Although the Earth seems solid to us, the part we live on is actually very thin. The surface of the Earth, the crust, is like the skin of a balloon. Inside the Earth is molten rock called magma that is in constant motion. The cool crust floats on this sea of liquid rock and we rarely see what is happening inside. When pieces of the crust rub together we feel an earthquake. When the crust cracks open the magma explodes or oozes out as the lava of a volcano. As magma reaches the surface it cools and hardens into new, young rock. Scientists call the new rock that forms from molten rock igneous rock. Most of the Earth's crust is made of igneous rock. Examples are granite, basalt, and obsidian.

It's not just the inside of the Earth that affects rocks. Rain and water wash over and rub against the rocks. Over a very long time tiny particles that make up the rock are worn away. This is called weathering. The particles are washed away with the water, flowing downhill until they settle in the bottom of a pool or stream. After a heavy rain you can often see erosion and gravel and sand left along the roadsides. A pond or lake will often look muddy because there are so many tiny particles of rock and soil suspended in the water. Eventually all these particles will fall to the bottom and build up a layer of mud and sand. Year after year this layer gets thicker and thicker. These layers of mud and sand are called sediments. The particles on the bottom are squeezed together because of the weight of the mud and sand on top. Over thousands of years the sediments are squeezed together so tightly that they form new rocks. These are called sedimentary rocks because they are formed from the sediments in the bottom of a lake or ocean. Sometimes tiny animals are buried in the sediments. They also harden and turn into rock which we call fossils. Limestone, sandstone, and shale are examples of sedimentary rocks.

Older sedimentary or igneous rock is often pushed down deep into the crust of the Earth. The deeper it is pushed the more it heats up from the magma below and the pressure from the weight above. If the heat and pressure become high enough, the structure of the rock will change. The material in the rock will become harder and sometimes crystallizes into a metamorphic rock. Metamorphic rocks include marble, slate, and schist.

In time all rocks weather away and new rocks are created. This process of continuous change is called a cycle and the rock cycle is one of the Earth's basic systems. We don't notice it much because it happens so slowly. The rock you pick up off the ground may be a billion years old and it may take another billion years before it is recycled into some other kind of rock.

Name: \_\_\_\_\_ Date: \_\_\_\_\_

Group: \_\_\_\_\_ Section: \_\_\_\_\_

Read the article on the Rock Cycle.

Take notes on the three types of rock and answer the questions below.

What are the three types of rock?

1. Type of rock \_\_\_\_\_

Formation process: \_\_\_\_\_

2. Type of rock \_\_\_\_\_

Formation process: \_\_\_\_\_

3. Type of rock \_\_\_\_\_

Formation process: \_\_\_\_\_

Define these terms:

“Weathering”

\_\_\_\_\_

“Fossil”

\_\_\_\_\_

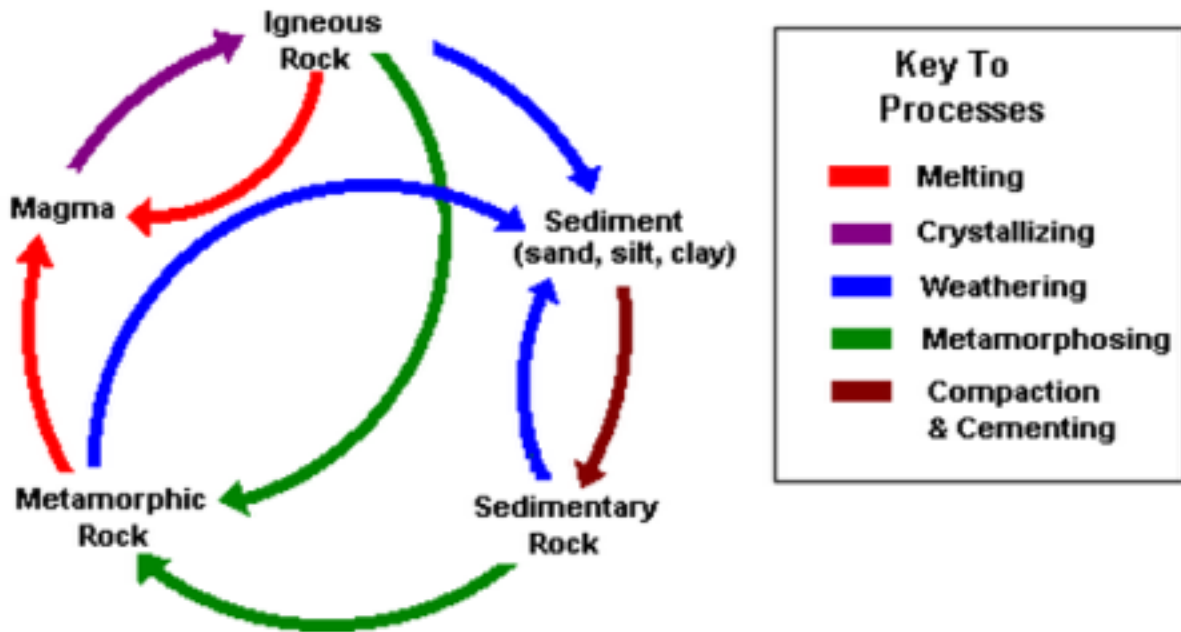
Why is it called the rock “cycle?”

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1. What process turns a sedimentary rock into a metamorphic rock?

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2. How is sediment formed?

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3. What types of rock can form from metamorphic rock?

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4. In the rock cycle, igneous, metamorphic, and sedimentary rocks can all become magma again. What step in the rock cycle causes this to happen?

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5. Which of the following processes are required in the formation of all sedimentary rock?

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6. What is another way to describe the crystallization process?

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7. What are two processes that could happen to a metamorphic rock to continue the rock cycle?

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8. Based on what we know about metamorphic rock. What does metamorphosing mean?

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9. Metamorphic rock is pushed deep into the surface. What type of rock will the metamorphic rock most likely become next?

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10. If metamorphic rock is pushed up closer to the surface, what type of rock will it become?

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